

NAVAL MEDICAL RESEARCH AND DEVELOPMENT NEWS

Volume II, Issue 8

August 2010

Navy's Pacific Lab Changes Commanding Officers and Location

By Dr. Stephen Walz, NMRC

In an afternoon ceremony at the Sunset Lanai on Camp H.M. Smith, overlooking Pearl Harbor, Capt. Gail L. Hathaway, Medical Service Corps, U.S. Navy, relieved Capt. Trevor R. Jones, Medical Service Corps, U.S. Navy, of command of Naval Medical Research Unit No. 2 ([NAMRU-2](#)). In addition to the change in leadership, this transfer marked the relocation of NAMRU-2 from Jakarta, Indonesia, to Pearl Harbor and its redesignation as NAMRU-2 Pacific. This redesignation is indicative of the importance of NAMRU-2 and its mission of infectious disease surveillance, response and capacity building to U.S. Pacific Command (PACOM) and U.S. Pacific Fleet (PACFLT) strategic interests in the Pacific Area of Responsibility.

The guest speaker for the change of

command ceremony, Rear Adm. Robin M. Watters, Chief of Staff, PACOM, emphasized the importance of this alignment in the course of his comments. As Capt. Hathaway comes to NAMRU-2 from the PACFLT staff where she served as the Deputy Surgeon, NAMRU-2 Pacific, Pearl Harbor is uniquely positioned to advance U.S. health diplomacy in the region through its regional engagements with foreign national health and research agencies. Although the Pearl Harbor location allows for significant interaction with PACOM and PACFLT, the future of NAMRU-2 Pacific is back in Asia. The Bureau of Medicine and Surgery, PACOM and PACFLT are actively investigating locations for the command, as its mission, driven by the tropical diseases that threaten deployed troops, is forward deployed. In the interim, NAMRU-2 remains in control of

its major field laboratory in Phnom Penh, Cambodia and will continue to conduct infectious disease research, surveillance and response, and capacity building projects in Cambodia, Laos, Singapore, Malaysia and elsewhere in Southeast, South, and Central Asia as opportunities present themselves.

While the remarks of Capt. Hathaway and Capt. Richard L. Haberberger, Jr., Commanding Officer of the Naval Medical Research Center and Presiding Officer for the ceremony, echoed the positive, forward-looking tone struck by Read Adm. Watters, Capt. Jones' remarks were more somber. He attributed much of NAMRU-2's 40 years of successful engagement with Indonesian collaborators to the hard work and dedication of its local Indonesian staff, and gave an emotional summary of the last weeks at NAMRU-2 where, despite their termination notices, the local staff continued to work long hours to close out the lab they loved and had so faithfully served.

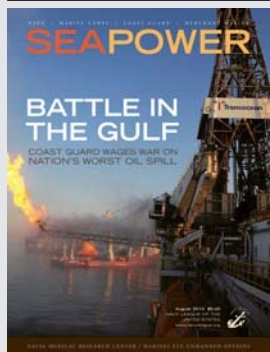
NMRC Enterprise In the News



Cracking the Code: DoD's Quest for a Malaria Vaccine

The August issue of MHS Profiles, electronic magazine, profiles the DoD malaria vaccine program, which hopes to unravel the major complexities of the malaria parasite to develop a vaccine that will control, and someday eradicate, malaria.

http://www.health.mil/News_And_Multimedia/MHS_Profiles/crackingthecode.aspx



The Sun Never Really Sets on Naval Medical Research In My Own Words - Cmdr. Eric Elster

The August issue of Sea Power magazine has two stories about Navy Medicine R&D - a feature story on the Enterprise and our efforts to increase warfighter survival and a profile of one of our researchers.

<http://www.navyleague.org/>

In this issue:

CO's Message	2
ONR Program Review at NMRC	2
NAMRU-3 Fights Disease	3
Hospital Corpsmen in FPEX	3
NHRC Conducts Border Study	4
Dental Corps Birthday	4
NAMRU-3 Provides Training	5
Malaria Outbreak in Liberia	6
Medical Service Corps Birthday	6
NAMRL Continues Move to Ohio	7
NMRC's Diarrhea Vaccine Tests	7
U.K. Scientists Visit NMRC	8
NMRC Combats Malaria	8
Directed Energy Research	9
Ombudsman's Note	10

Commanding Officer's Message

Greetings,

The Naval Medical Research Center Enterprise provides critical mission support to the Navy and Marine Corps in the form of basic and applied biomedical research. The men and women who make up our global team represent an impressive array of academic and scientific knowledge with years of practical experience in science, medicine and the military. They work in our laboratories and on the ground in remote areas of the world, they build partnerships with other government and civilian agencies and private industry – they are an impressive multifaceted, multitalented team. They share their findings with others through exchange visits, at professional conferences, through scientific publications and also hands-on through international military-to-military collaborations and public health capacity-building efforts. This is illustrated very well in this issue of our newsletter. From our research review programs, to helping combat infectious diseases in a community in Egypt, to investigating a malaria outbreak in Liberia and strengthening research collaborations with our peers in the British Armed Forces, and so much more. This issue represents just the tip of the iceberg of all we do in Navy Medicine research and development.

Over 1,600 dedicated employees in our network of laboratories throughout the United States and around the world play a critical role within Navy Medicine – we are proud to be out in front for Navy Medicine by improving readiness and enhancing future capabilities through our vital work – all in support of Navy, Marine Corps, and joint U.S. warfighters.

To all the Dental Corps Officers and Medical Service Corps Officers who contribute so much to our success – happy birthday – thank you for all you do!



Commanding Officer sends,
Richard L. Haberberger, Jr.
CAPT, MSC, USN

In-House Laboratory Independent Research Program Review

Nine researchers from the Naval Medical Research Center ([NMRC](#)) enterprise presented overviews of their Office of Naval Research (ONR) funded basic research projects for a panel of reviewers. NMRC hosted the all-day annual event June 30.

The panel's role was to assess the scientific and technical quality of the medical In-House Laboratory Independent Research (ILIR) Program and the relevance to the overall Navy Medicine mission. These efforts support research in critical operational areas including aviation medicine, infectious diseases, vaccine development, trauma and resuscitative medicine, regenerative medicine, toxicology and health effects, submarine medicine and special forces performance assessment. In addition to NMRC, the [Naval Submarine Medical Research Laboratory](#), [Naval Aerospace Medical Research Laboratory](#), [Naval Health Research Center - Environmental Health Effects Laboratory](#) and [Naval Medical Research Unit - San Antonio](#) were represented.

"The Navy Medical In-House Laboratory Independent Research Program is an integral part of the [Department of the Navy Science and Technology] Program. It represents the discovery and invention component of the program that provides for basic research at participating Navy laboratories and warfare centers," said Dr. John Thomas, NMRC scientific director, who recently retired after hosting the review.

Thomas went on to explain that the program sees basic research as a systematic study directed toward gaining greater knowledge or understanding in a variety of fields, including life sciences. It is fundamental research and not specifically directed at solving any particular biomedical problem. It is designed to be farsighted, potentially high payoff research that provides the basis for future technological progress.

"The Navy Medical ILIR Program contributes to retention of outstanding medical scientists within the Navy medical laboratory community," said



Dr. Richard McCarron of NMRC provided an overview of his research on blast-induced brain injury as part of the ONR Navy Medical In-house Laboratory Independent Research FY 10 program review, June 30, 2010. Photo provided by NMRC.

Thomas. "It provides the opportunity to grow the research workforce through the training and career development of young military officers and emerging investigators."

Cairo Lab Helps Combat Infectious Diseases in Damanhour, Egypt



Capt. Robin Wilkening, NAMRU-3 Commanding Officer, greets the Damanhour Fever Hospital surveillance team. Photos by Darnell Gardner.

By Darnell P Gardner, Jr., Public Affairs Officer, NAMRU-3

June 20, 2010 marked the first anniversary of the Damanhour Population Based Surveillance Project in Damanhour, a city of 700,000 in the Nile Delta. The project is a partnership with the Egyptian Ministry of Health and U.S. Naval Medical Research Unit No. 3 (NAMRU-3), with the collaboration of the Department of Defense's Global Emerging Infection Surveillance

and Response System (DoD-GEIS), the Centers for Disease Control and Prevention (CDC) and the International Emerging Infections Program (IEIP) in Egypt. These organizations have united to strengthen Damanhour district's overall capacity to identify and control infectious diseases.

The Damanhour project was established in 2009 to identify all patients in the district with distinct severe infections, including acute respiratory infection, acute infectious neurological

disease, acute febrile illness, acute diarrheal infection and tuberculosis.

NAMRU-3's Ms. Lisa Peters, M.P.H., explained, "We wanted to develop an integrated system in which we could detect different disease syndromes through the use of laboratory diagnostics and clinical information. Ultimately, we intend to visit all hospitals, select health units and private clinics with patients presenting with any of the stated syndromes and find the causes."

The project was designed as a dual-phase system. The first phase involved training sessions conducted by NAMRU-3 epidemiologists for the designated surveillance team, which was composed of a social worker, nursing staff, laboratory technicians and an IEIP official. The next phase strategically placed social workers in predetermined health offices to interview prospective patients meeting symptom-based enrollment criteria. The nursing staff then obtained samples via naso-pharyngeal swabs or blood and forwarded them to the laboratory for identification/diagnostics. IEIP officials recorded results in the surveillance database, which were later compiled and analyzed for disease occurrence.

Capt. Robin Wilkening, NAMRU-3
Continued on page 5

Hospital Corpsmen Participate in Force Protection Exercise

On July 20, HMC(SW/AW) Jesse King and HM1(FMF) Hector Cano, members of the Naval Medical Research Center (NMRC) Biological Defense Research Directorate (BDRD) Operations Department, participated as coordinators and observers in a Force Protection Exercise (FPEX) conducted by the 3rd Fleet in San Diego, Calif. to aid in the battle readiness of the USS Abraham Lincoln strike group. The BDRD Operations Department periodically participates in biological identification and detection scenarios for FPEX. These training exercises allow BDRD to observe and evaluate the operational readiness of the Joint Biological Agent Identification and Diagnostic System (JBAIDS) detection platform onboard ships.

The lab exercise consisted of a simulated biological agent attack aboard the USS Abraham Lincoln. The drill was performed in order to see how well the Damage Control (DC) Department and the Medical Department

laboratory worked together. The DC team isolated, collected and prepared for transport the sample they found. The laboratory technician who accepted the sample processed and tested for the unknown agent.

Included in the exercise was a Vehicle Borne Improvised Exploding Device scenario on the pier that resulted in a mass casualty. Volunteer Sailors were in complete moulage, including being dressed up as foreign nationals. HMC King and HM1 Cano were on hand to evaluate the medical response and coordination from the ship.



HMC Jesse King awaits security and medical response from ships on the pier.

Investigators Set Surveillance and Training Goals for Border Study

As a result of the ebb and flow of commerce, produce and travelers, regions spanning national borders are conducive for the migration of infectious diseases. Since 2004, the Naval Health Research Center (NHRC) has collaborated with the Mexican Secretariat of Health and the U.S. Centers for Disease Control and Prevention (CDC) in a study supported by the Armed Forces Health Surveillance Center (AFHSC) to conduct population-based respiratory disease surveillance on the U.S./Mexico border. Demographic and symptom information and respiratory swabs are collected from patients at local clinics who meet the case definition for an influenza-like illness. NHRC identifies and characterizes isolated respiratory pathogens.

During the Bi-national Infectious

Diseases meeting in San Antonio, Texas, June 28-30, representatives from local and federal public health laboratories discussed collaborative efforts with their Mexican counterparts. While attending the conference, Cmdr. Patrick J. Blair met with U.S. CDC and Mexican officials from the Diagnostic and Epidemiological Reference Institute (InDRE) to review results and develop future plans. Through a grant from the U.S. State Department, NHRC and InDRE also cooperate in the training of scientists in diagnostic and biological laboratory safety.

In September 2010, Dr. Celia Alpuche Aranda plans to visit NHRC to provide follow-up from the San Antonio meeting. The mutual trust developed in this partnership was conducive in allowing the sharing of samples and information during the early days of the

pandemic and will continue to serve as an avenue of cooperation for public health between the two nations.



Dr. Celia Alpuche Aranda, Director General, Diagnostic and Epidemiological Reference Institute, provides opening remarks during United States-Mexico bi-national Infectious Disease Conference in San Antonio, Texas. Photo provided by NHRC.

Dental Corps Birthday – Navy Dental Research for the Warfighter

By Dr. John Simecek, NAMRU-San Antonio

On August 22, 1912, the second session of the 62nd Congress passed an act later signed by President Taft that established the Navy Dental Corps. For 63 of the 98 years since the Navy Dental Corps was established, research pertaining to oral and dental disease has been carried out by the Navy's dental officers and scientists.

The prevention of oral/facial problems and the delivery of dental

care to deployed Sailors and Marines is a focus of the [Dental and Biomedical Department](#) at the Naval Medical Research Unit-San Antonio ([NAMRU-SA](#)). A study of the types of oral/facial problems and dental emergencies experienced in Iraq and Afghanistan is underway. Preliminary analysis indicates that over 30 percent of the total visits require treatment of fractured teeth, fractured restorations or defective restorations. Approximately two percent of oral/facial problems were due to traumatic events and five percent involved third molars. Although the majority of military personnel with oral/facial problems experience mild to moderate pain or loss of dental function, approximately twenty percent may be of sufficient severity to cause the warfighter to experience a limitation of operational capability. This data will be used to optimize the diagnostic guidelines utilized to determine operational dental readiness of personnel.

In order to address the common problem of tooth/restoration fracture, a field-deployable glass ionomer restorative material was developed that

provides rapid pain relief and allows for restoration of fractured teeth or restorations. The delivery system is designed to enable far-forward personnel to provide palliative treatment to enable a return to duty until dental support becomes available.

On May 6, 2009, NAMRU-SA became the Navy's center for research related to the epidemiology, diagnosis, treatment and prevention of oral/dental diseases and injuries that affect the health of Navy and Marine Corps personnel. The dental officers and scientists of NAMRU-SA continue in the tradition of Navy Dental Research to develop novel products and provide information that will enhance the health and readiness of Sailors and Marines.



Example of a fractured tooth with a temporary filling.



Navy-developed temporary filling material. Photos provided by NAMRU-SA.

Navy's Cairo Lab Provides Training Opportunities in the Region



Vector biology trainees from the U.S. Army Medical Research Unit-Kenya, in Kisumu, Kenya, train on sand-fly identification. Photo by Rania Kaldas.

By Darnell P Gardner, Jr., Public Affairs Officer, NAMRU-3

U.S. Naval Medical Research Unit No. 3 ([NAMRU-3](#)), in partnership with regional ministries of health, the World Health Organization/Eastern Mediterranean Region Office, and various U.S. government agencies, provides training opportunities in workshops, training sessions and conference venues aimed at enhancing the skill set and readiness of medical research professionals throughout the region.

Recently, the Kenyan Ministry of Health asked NAMRU-3's Vector Biology Research Program ([VBRP](#)) staff to host three trainees from the U.S. Army Medical Research Unit-Kenya, in Kisumu, Kenya. During the

two-week course, they received training on sand fly colonization and biology in addition to vector insecticide resistance assay techniques, which are used for vector control. To complete the session, the trainees were given instruction on sand fly identification and tutored on advanced molecular level techniques for *Leishmania* detection. The entire VBRP staff are proud of their work and think it is great they are viewed as the subject matter experts for the continent of Africa and the Eastern Mediterranean Region.

Another example of training, outfitted as a readily deployable training unit, NAMRU-3's [Viral and Zoonotic Disease Research Program](#) sent two virologists to Yemen in support of renewed training agree-

ments. Respected as specialists in influenza diagnostics and surveillance, NAMRU-3 researchers trained ministry of health employees on the theoretical and scientific background of virus isolation and identification. In addition, they assisted with starting a new viral sample collection site at the University of Science hospital in Sanaa, the capital of Yemen. Results from training were evident when local staff successfully isolated an Influenza B/2008-like strain out of seven clinical specimens.

A third example began in June 2010, when NAMRU-3 researchers Lt. Cmdr. David Rockabrand and Ms. Margaret Farrell served as lead coordinators for the inaugural Integrated Laboratory Management Training Workshop in Baghdad, Iraq. Sponsored by the U.S. Department of State's Iraqi Scientist Engagement Program, the training course represented the third installment of training associated with NAMRU-3's public health capacity-building project in Iraq. The workshop audience consisted of twenty-three competitively selected laboratorians and laboratory supervisors representing the Central Public Health Laboratory and National Veterinary Laboratory in Baghdad, the Central Veterinary Laboratory in Erbil and the Veterinary Laboratory in Duhok.

Farrell said, "Topics for the workshop focused on laboratory quality systems essentials, organization, facilities and bio-safety, equipment, sample management, process control, quality control of qualitative and quantitative tests, assessment, accreditation, documents and records, occurrence management and process improvement."

Cairo Lab Helps Combat Infectious Diseases in Damanhour, Egypt

Continued from page 3

Commanding Office, said, "The progress in public health surveillance and diagnostic capability that has resulted from the Damanhour partnership after just one year is awe-inspiring and is a credit to the skill, enthusiasm and whole-hearted dedication of all team members. From this outstanding collaboration will spring other accomplishments that will benefit the health of the citizens of Damanhour,

Egypt, and the region."

Dr. Adel Mansour, Damanhour IEIP site coordinator, also said, "The surveillance project has proved a great success. Our staff is now able to confirm positive results on cerebral spinal fluid cultures, which have been linked to *Streptococcus pneumoniae*; something never before accomplished. This has resulted in improved patient treatment options."

Quick Response Team Investigates Malaria Outbreak in Liberia

By Darnell P Gardner, Jr., Public Affairs Officer, NAMRU-3

In response to a recent cluster of malaria cases among U.S. troops deployed to Liberia in support of Operation Onward Liberty, U.S. Naval Medical Research Unit No.3 (NAMRU-3) developed a quick outbreak response team to investigate.

Lt. Cmdr. Karl Kronman, NAMRU-3 [Ghana Detachment](#), and Lt. Cmdr. Peter Obenauer, Head, NAMRU-3 [Vector Biology Research Program](#) in Cairo, responded. The first priority was to determine the factors contributing to the high incidence of malaria. The investigation then focused on compliance in personal protective measures, mosquito infective rates, drug resistance and possible environmental factors.

"I think we have identified some ways that force health protection can be improved in Liberia, and I look forward to continuing to provide operational support to our deployed troops and AFRICOM [U.S. Africa Command]," said Kronman.

Obenauer explained how the team conducted interviews, inspected sites, trapped mosquitoes, drew blood for further analysis and made environmental site assessments. "Simple mosquito control measures like eliminating breeding sites should be done immediately. In addition, vector control measures like spraying should be conducted by properly trained and equipped personnel. NAMRU-3 is planning to provide continued assistance to AFRICOM on many of the issues identified, including the need for improved diagnostics and malaria drug resis-

tance monitoring in West Africa," said Obenauer. He also emphasized the need to be vigilant in consistently using bed-nets and mosquito repellents such as DEET as the first line of defense.

Future collaborations with the Liberian Institute for Biomedical Research, the Presidential Malaria Initiative and the Centers for Disease Control are anticipated. One of the goals Obenauer hopes to accomplish is to help develop their laboratory capability and mosquito surveillance program. Malaria transmission is year-round in Liberia.

"It is very satisfying to be able to use my skill and knowledge, as well as the expertise available at NAMRU-3, to improve the health and safety of our deployed troops in Africa," said Kronman.

Happy 63rd Birthday to the Medical Service Corps

By Cmdr. Eric Hall, NMRC

The Medical Service Corps (MSC) birthday celebration is a time to recognize the outstanding commitment and

extraordinary capability that the Health Care Specialists bring to our Sailors, Marines and families around the globe. The Navy MSC has more than 3,500 active duty and reserve officers in 31

specialties performing on multiple platforms continuing the mission that was identified over 63 years ago.

The MSC officers within the Naval Medical Research and Development (NMR&D) Enterprise include Microbiologists, Entomologists, Biochemists/Toxicologists, Physiologists, Research Psychologists, Industrial Hygienists, Environmental Health Specialists and Health Care Administrators. This group of dedicated MSC officers works extremely hard to enhance the health, safety and readiness of Navy and Marine Corps personnel in the effective performance of peacetime and contingency operations. Serving in state-of-the-art NMR&D commands worldwide, MSC officers support research covering infectious diseases, biological warfare defense, directed energy bioeffects, combat casualty care, dental, environmental health, bone marrow transplantation, aerospace and undersea medicine, medical modeling simulation and mission support, war-fighter performance, epidemiology and behavioral sciences. Happy Birthday to a group of highly professional and truly dedicated MSC officers!



NMRC Medical Service Corps officers celebrate the MSC's 63rd birthday. From left: Lt. Cmdr. Tad Kochel, Lt. Cmdr. Walter Carr, Lt. Kristina Martin, Lt. Mario Guerrero, Lt. Mike Prouty, Lt. Cmdr. Guillermo Pimentel, Lt. Cmdr. Matthew Weiner, Lt. Gabriel Defang, Lt. Kevin Marrs, Capt. Elizabeth Montcalm-Smith, Lt. j.g. Amanda Gardner, Capt. Eileen Villasante, and Capt. Richard Haberberger. Not pictured: Capt. Trevor Jones, Cmdr. Trupti Brahmhatt, Cmdr. Gail Chapman, Cmdr. David Fryauff, Cmdr. Eric Hall, Lt. Cmdr. Franca Jones, Lt. Cmdr. Theo Zainal, Lt. Cmdr. Michael Zyzak, Lt. Andrea McCoy, Lt. Irina Roman, and Lt. j.g. Kevin Stephens. Photo by Phil Collins.

Visual Vestibular Sphere Device Moving to New Command in Dayton

By Rene Lojewski, NAMRL Public Affairs

The Naval Aerospace Medical Research Laboratory (NAMRL) is the Navy's preeminent laboratory for spatial disorientation and vestibular research,

playing a vital role in identifying and providing solutions to aeromedical problems encountered in the aviation environment. In November 2005, Base Realignment and Closure (BRAC) directed the Navy to realign Naval Air Station (NAS) Pensacola, Fla., by

relocating NAMRL to Wright-Patterson Air Force Base (WPAFB), Ohio, establishing the Center of Excellence for Aeromedical Research, Education and Training. BRAC necessitates relocating the unique collection of man-rated acceleration research devices from NAS Pensacola to WPAFB.

One of the distinctive devices moving to WPAFB is the Visual Vestibular Sphere Device (VVSD), which provides visual and vestibular stimuli in a controlled method to allow evaluation of human performance in unusual environments. The device consists of a 12-foot diameter spherical surround with a chair at the bottom along its center axis. The interior of the sphere is covered with strategically placed black dots to provide a frame of reference for the subject. Both the chair and sphere spin independently on the vertical axis, while the entire device is able to rotate on a horizontal axis to allow for off-vertical rotations. In preparation for the move to Ohio, a contractor completed the disassembly, crating and staging of the VVSD in June. Subsequent phases of the contract, including transport of components, reassembly and testing, will occur in 2011. The VVSD is slated to be back in operation in June 2011.



The Visual Vestibular Sphere Device prior to being disassembled for the move to Wright-Patterson Air Force Base in Dayton, Ohio. Photo provided by NAMRL.

Naval Medical Research Center Accelerates Diarrhea Vaccine Testing

The Naval Medical Research Center (NMRC) will begin a preclinical study with a nonprofit partner to test a promising vaccine candidate against travelers' diarrhea. PATH and NMRC will conduct laboratory toxicology tests of the vaccine, which the U.S. Food and Drug Administration usually requires before a vaccine is tested in humans.

"We are very pleased to be teaming up with PATH to conduct this critical study, the last hurdle before initiation of the first-in-human testing of our new enterotoxigenic *E. coli* (ETEC) vaccine candidate," said Capt. Stephen Savarino, leader of the NMRC research team that invented and put into practice the new vaccine technology. "We believe this vaccine candidate has the potential to curtail the number and

severity of food-borne illnesses due to ETEC. It may also decrease the risk of post-infectious irritable bowel syndrome, which afflicts one in ten who experience travelers' diarrhea."

Travelers' diarrhea represents a very common communicable disease threat to U.S. and coalition forces deploying to Iraq and Afghanistan, with the potential to degrade force health and operational readiness. It also afflicts 40 to 60 percent of the 64 million who travel from industrialized countries to less-developed countries each year.

"We are pleased to see the collaboration with PATH accelerate our clinical development of this vaccine. PATH is committing their expertise and resources to ensure that this study is done to the highest standard and to advance a

vaccine candidate that also has the potential to reduce the burden of diarrheal disease among children in the developing world," said Capt. Richard L. Haberberger, Jr., NMRC Commanding Officer. "In today's research environment, partnering with organizations like this is often needed to advance development of our products through the paces of clinical testing."

NMRC announced in March 2010 a research and licensing agreement with Sanofi-Pasteur to further advance preclinical development of the adhesin-based ETEC vaccine technology. If the first-in-human clinical trials show that the vaccine is safe and elicits good immune responses, it will enable further development of a multivalent adhesin-based ETEC vaccine.

U.S., U.K. Military Researchers Discuss Scientific Collaboration

By Cmdr. Mark Riddle, NMRC

The Naval Medical Research Center (NMRC) [Enteric Diseases Department](#) hosted a delegation from the British Armed Forces July 7 and 8 to continue discussions and strategic planning sessions on collaborations. Lt. Col. Patrick Connor (British Army), Wing Commander Andy Green (Royal Air Force), and Capt. Lynn Thomas (Royal Navy) met with key members of the U.S. Navy and U.S. Army staff to update ongoing joint military efforts in Afghanistan to ascertain the etiology and impact of infectious diarrhea among British troops.

They also discussed start-up efforts that will be located at British Army training sites in Kenya and Belize, which will receive support from regional U.S. Department of Defense labs (U.S. Army Medical Research Unit-Kenya (USAMRU-K)

and Naval Medical Research Center Detachment ([NMRCD](#))-Lima, Peru).

Joint working sessions were held among Walter Reed Army Institute of

Research, USAMRU-K, and NMRC investigators to finalize a cohort study protocol that will be funded

Continued on page 10



British military officers meet with key NMRC personnel. From left: Capt. Stephen Savarino, Capt. Lynn Thomas (Royal Navy), Capt. Richard L. Haberberger, Jr., Wing Commander Andy Green (Royal Air Force), Lt. Col. Patrick Connor (British Army), Dr. Stephen Walz, Cmdr. Mark Riddle, and Capt. Eileen Villasante. Photos by Phil Collins.

Peru Lab, University of California Join Forces to Combat Malaria

The U.S. Naval Medical Research Center Detachment ([NMRCD](#)) joined a consortium of institutions from Peru, Brazil and the United States to develop a center of excellence for malaria research that will work towards the control and eventual eradication of malaria from the Amazon region.

"The contributions of NMRCD to determine the incidence of *vivax* malaria in the study sites in Peru and Brazil will be a key complement to Navy Medicine research to develop and test candidate *vivax* malaria vaccines in the future," said Capt. Richard L. Haberberger Jr., the Commanding Officer of the Naval Medical Research Center, Silver Spring, Md. "This will be an important step forward and will eventually contribute to the overall health of deployed Sailors and Marines. This is why it is vital we maintain forward-deployed labs like NMRCD where there is a focus on force health protection, research and development, and public health diplomacy."

The Center of Excellence is sup-

ported by a seven-year grant from the U.S. National Institutes of Health (NIH). The principal investigator is Dr. Joseph Vinetz of the University of California at San Diego. NMRCD's [Parasitology](#) and [Entomology](#) programs will have integral roles in field and laboratory activities leading to determining malaria incidence rates, genotyping parasites, monitoring drug resistance and determining which mosquitoes are transmitting malaria in the area. NMRCD will manage the Madre de Dios, Peru site and will collaborate on activities in Iquitos, Peru, two of the study locations.

"NMRCD will also be responsible for the data management component of the program and capacity building efforts, standardizing and enhancing data processing and analysis, as well as assisting host-country partners to improve their ability to conduct malaria research and utilize research findings for policy and program development," said Lt. Paul Graf, Head of the Parasitology Department.

Dr. Andres G. Lescano, the Deputy

Head of the Parasitology Department and Director of Public Health Training at NMRCD, will lead the data management core and training component of the program. Along with Graf, Lt. Kirk Mundal, Head of the Entomology Department, will be in charge of human and vector interaction studies in Madre de Dios and they will also support activities in the other sites.

"This award and the partnership with world-class research centers in South America and the U.S. confirm the caliber of the work conducted in U.S. overseas research centers such as NMRCD. This center will develop a new generation of malaria researchers and will create important opportunities for the advancement of Navy Medicine research," said Cmdr. John Sanders, the Officer in Charge of NMRCD.

The award for the Amazon region Center of Excellence in Malaria Research was one of ten grants announced July 8, 2010, by the U.S. National Institute of Allergy and Infectious Diseases of NIH.

Who We Are - Naval Medical Research Unit - San Antonio

Directed Energy Biomedical Research Department Looks to the Future

By Norman Barsalou, NAMRU-SA



Moviegoers heaved a collective sigh of relief in 1964 when secret agent James Bond escaped from the business end of a big red industrial laser. Lasers had been invented just four years earlier and, like Auric Goldfinger, scientists and engineers almost immediately imagined laser weapons. Last month marked the 50th anniversary of the official announcement of the laser at the Hughes Research Laboratory in California. Recent research advances by the U.S. Navy are making those half-century old ideas real as demonstrated at the recent Farnborough Airshow, where a contractor demonstrated a U.S. Navy-sponsored anti-aircraft laser weapon.

The Directed Energy Biomedical Research Department (DE) of the Naval Medical Research Unit-San Antonio (NAMRU-SA), Brooks City-Base, Texas, has been researching the effects of lasers, radars, high-powered microwaves and other electromagnetic emitters for far longer than the short one year that NAMRU-SA has been around. DE is one of three research departments in the command (together with Combat Casualty Care and Dental and Biomedical Research) and has a Navy Medical Research and Development heritage reaching back to the late 1960s when this work was done by the Naval Aerospace Medical Research Laboratory (NAMRL) in Pensacola, Fla. DE then operated as a division until it was moved as a result of Base Realignment and Closure (BRAC) activity. BRAC 2005 set in motion the creation of NAMRU-SA and the inclusion of the Naval Health Research Center's Directed Energy Bioeffects Laboratory (DEBL), which is the most recent predecessor to the current DE Biomedical Research Department.

The department has members on standards committees such as the

Institute of Electrical and Electronics Engineers, International Committee on Electromagnetic Safety (IEEE-ICES) conducting studies to evaluate the health and safety implications of the current technologies that enable cellular phones, Internet broadband, pacemakers, phased array radars, laser designators and rangefinders, to name just a few. Other recent systems evaluated for personnel health and safety include the futuristic non-lethal Active Denial System and several counter-improvised explosive device systems.

With the advent of research into the personnel health and safety aspects of conducted electricity, the department is conducting research from "direct current to light" in the electromagnetic spectrum, making it unique within the Navy. Other unique capabilities include the development and deployment of the "Brooks or Electromagnetic Man," a computer database derived from electromagnetic absorption measurements. The department is pioneering a new discipline called "computational dosimetry" that complements the measurements capability of the department and helps minimize the Navy's expense in adding, updating or replacing many of the various antennae in the Navy. The department's research and development program is ongoing and contains all the legacy functions along with some new, truly biomedical activities focused on the use of electromagnetic energy to diagnose and treat medical injuries and conditions.

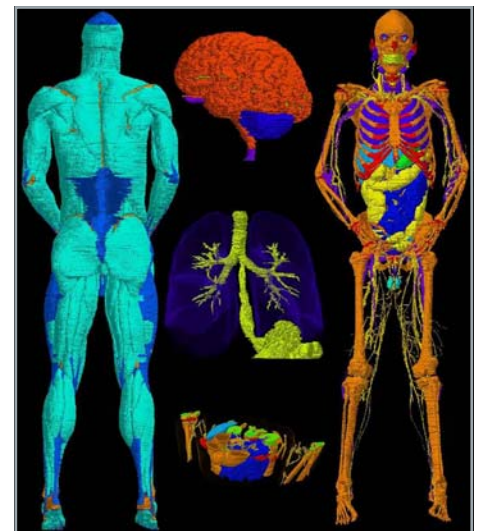
The department is organized in two functional divisions: the Bioeffects Division and the Modeling and Simulation Division.

The DE Bioeffects Division studies the effects of non-ionizing electromagnetic (EM) energy. EM sources are used extensively in the Navy in diverse applications ranging from communications, jamming, target designation, surveillance and new medical therapies, and emit radiation throughout the spectrum including radio frequency, millimeter wave, and optical frequencies. This research ensures exposure

standards protect the health and safety of all personnel operating in and around these sources. Research also identifies and characterizes new directed-energy threats in the operational environment. In addition, DE bioeffects research examines novel medical and biomedical applications of directed energy such as targeted drug delivery and micro- and nanoscale surgery.

The Modeling and Simulation Division conducts research to generate and test computational models representing the physical interaction of EM energy with biological systems ranging from single cells to complex organisms. These models are used to estimate and ensure EM source standards compliance and to understand the effects of new EM sources on biological, biomedical or novel materials, including nano-materials.

DE is looking forward to developing medical diagnostic and therapeutic applications for lasers, terahertz radiation ("T-Rays") and other EM sources with its NAMRU-SA sister departments of Combat Casualty Care and Dental and Biomedical Research in its new home next year at Ft. Sam Houston, Texas. After all the BRAC 2005 moving parts come to rest, DE will find its new home in the 180,000 square foot Tri-Service Research Building scheduled for completion in March 2011.



The "Brooks Man" computer database tool. Photo provided by NAMRU-SA.

U.S., U.K. Military Researchers Discuss Scientific Collaboration

Continued from page 8

under the Military Infectious Disease Research Program with the objective of determining incidence and etiology

of infectious diarrhea among British forces on exercise in Kenya and preparing a site for future operationally relevant interventional trials. The

observational study, which is expected to start next spring, would enroll a total of 200 British Army troops while in garrison in the United Kingdom and follow them during their six-week deployment for hot-weather training. If successful, the information obtained from this study will have important relevance to the risk of disease among U.S. troops deploying to a similar country within the U.S. African Command and would demonstrate the likely success of a field site to study other relevant infectious diseases.

As Lt. Col. Connor said, "We both have the same priorities when it comes to infectious diseases, and we are appreciative of your capability and expertise in conducting operationally relevant research from which we both can learn."



NMRC personnel discuss scientific collaboration with visiting British military officers.

Greetings from the NMRC Ombudsman!

I hope everyone is having a great summer and finding ways to cope with the heat! Make sure you know how to deal with extreme temperatures and humidity. Keep up with local weather forecasts. Put off strenuous activities until cooler times of the day. Drink lots of water. Check on friends and neighbors that may not be able to tolerate the heat well. Be aware of the signs of heat exhaustion and heat stroke. Have a safe summer.

Operation Prepare

If you live in or around the Washington, D.C. area, you know that mother nature has been creating a little havoc for the past several months. We have had record-breaking snowstorms, an earthquake (albeit minor), and destructive rain storms. Even though we have managed to get through all of these, each event created problems with work, home, school and traffic. These smaller disasters are a good reminder to always be prepared for any emergency. Are you ready? Fleet and Family Support Services has created a website to help each one of us be prepared. The keys to disaster preparedness are: Be informed, Have a plan, Make a kit, Keep up with regional information, Know your resources. Check out the [Disaster Preparedness](#) site for all the details.

Health Coaching-iCAN Programs:

There is no time like the present to develop a healthier lifestyle. Military-OneSource has developed the iCAN program to make it easy. The program includes an optional telephone or online personal health coach, a personal homepage with tracker, interactive tools and a whole lot more. Develop strategies for weight management for you and your children, learn to handle life stressors, and improve your cardiovascular health, just to name a few. Go to www.MilitaryOneSource for more information.

If you need information on these or other resources, please contact me at angela.prouty@med.navy.mil or 217-722-4981.

Angela Prouty
Ombudsman, NMRC

NMR&D News

is an authorized publication of the Naval Medical Research Center, 503 Robert Grant Avenue, Silver Spring, Maryland, 20910.

NMR&D News is published monthly by the NMRC Public Affairs Office.

Please contact the Public Affairs Officer at 301-319-9378 or svc.pao.nmrc@med.navy.mil with questions or to submit an article.

Commanding Officer
Capt. Richard L. Haberberger, Jr.
Executive Officer
Capt. Eileen Villasante
Director for Administration
Cmdr. Eric R. Hall
Public Affairs Officer
Doris Ryan
Editors
Soni Fitzhugh and Jan Helman



<http://www.med.navy.mil/sites/nmrc/pages/index.htm>